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NOTES FOR REMARKS

BY

THE HONOURABLE ROBERT E.J. LAYTON

MINISTER OF STATE (MINES)

AT THE

ANNOUNCEMENT OF THE INTERIM CANADIAN SPACE PROGRAM

NATIONAL PRESS THEATRE

OTTAWA, ONTARIO

MARCH 20, 1985

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I want to bring you up to date on RADARSAT, the program to place a Canadian remote-sensing satellite in polar orbit early in the next decade – a satellite that will use radar as the prime sensor.

RADARSAT will perform a major role in the Canadian space program, and will provide linkage with the United States plan for a space station.

The project builds on Canadian expertise and achievements in remote sensing technology. The many applications of this new resource management tool will contribute to the strengthening of the vital resource sectors of the Canadian economy.

Last December, Phase B of the RADARSAT program commenced when EMR signed contracts with Canadian aerospace industries to begin work that includes initial development of some critical components of the satellite's hardware.

But there is another important development.

Last year NASA astronauts added a new and important feature to space technology. They proved that satellites can be repaired and refuelled while in orbit, or recovered and returned to Earth.

This added a new and important dimension and economic benefit to our RADARSAT plans.

Our scientists and engineers are now going to build longevity into RADARSAT. Originally it was to have a working life of about five years . . . we are now planning to double it.

Depending on when it is launched, that could keep it operating into the next century.

RADARSAT is to be launched from a NASA space shuttle. When the time comes for it to be refuelled or repaired, or for improved instrumentation to be fitted, it will be directed to leave its working orbit, 1000 kilometres above Earth, and drop to shuttle height of 240 kilometres.

Astronauts will then recover it with the Canadarm and perform the required tasks, and it will return to its 1000-kilometre position.

Because radar provides all-weather, cloud-penetrating, 24-hour service every day of the year, it is the ideal sensor for Canada, considering our geographical position and extremes of weather.

Economic benefits will be realized by the provision of ice and iceberg information for offshore drill rigs and for Arctic and coastal navigation, as well as analyses of crop conditions and information for forest management. Requirements for geological data will also be amply served by RADARSAT.

Cost recovery will be provided by the sale of data to foreign governments and provision for the world market of the first radar stereo-geological map of the world.

Data analysis is vital. It is one thing to receive data but it's another thing to know what to do with it.

Assisted by the Canada Centre for Remote Sensing, a branch of EMR, Canada's aerospace industries have become world leaders in the earth stations that process satellite data and produce surface images in all forms.

And we are far ahead . . . at present . . . in radar analysis.

Combined satellite data and earth station services on the world market put us on the threshold of a major export dollar-earner.

And who knows . . . by the time RADARSAT needs its first five-year checkover, Canadian astronauts could be doing the work in the space shuttle's bay!

- 30 -

BACKGROUNDER

RADARSAT

Canada is a world leader in receiving, processing and using remotely sensed data from satellites for a broad range of resource management and other purposes, from crop monitoring to sea-ice surveillance. To date, the Canadian remote sensing program has utilized data received from satellites operated by other countries.

The use of radar is the next step in operational remote sensing – radar sensors have the capability of 'seeing' during hours of darkness and through cloud cover. Canada, currently at the leading edge of this technology, is in the early phases of RADARSAT, a project that will see a radar-equipped Canadian remote-sensing satellite in orbit in the early 1990s.

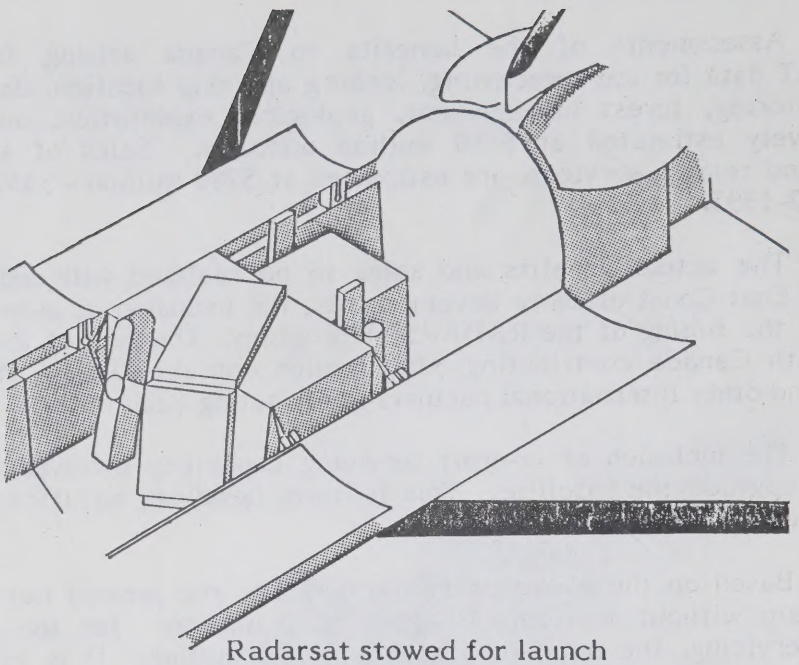
The RADARSAT program was initiated in 1981 by the Department of Energy, Mines and Resources through its agency, the Canada Centre for Remote Sensing (CCRS). Phase B, a major stage of the project, known as the Program Definition Phase, began in December 1984.

RADARSAT Objective

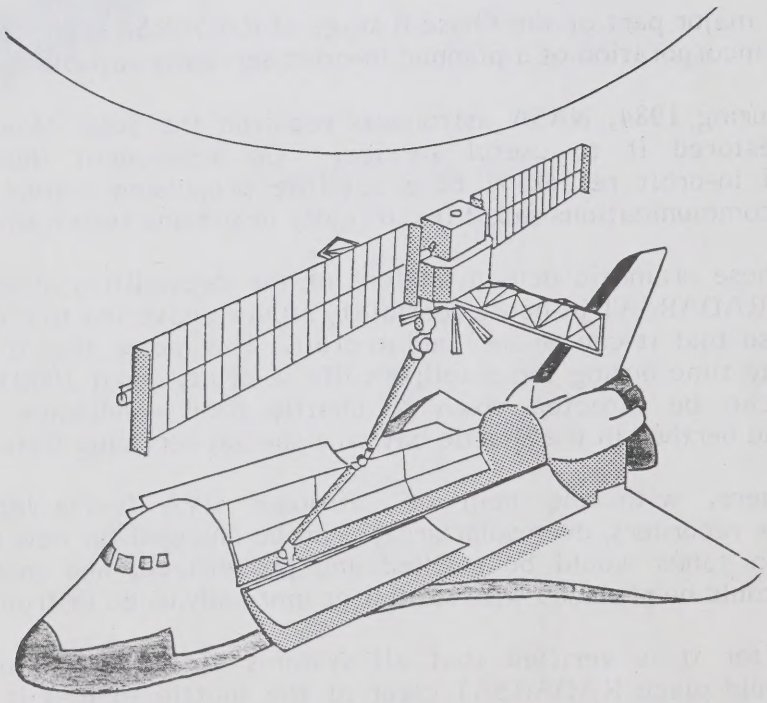
The strategic objective of the RADARSAT program is to provide the country's resource sector with remotely sensed data for resource management and energy development needs. RADARSAT will also increase our penetration of the international market for space and ground systems, as well as the applications expertise to export information services.

Canadian needs are for ice, iceberg, ship and ocean information over the Arctic and coastal economic zones, and for crop, forest, hydrological and geological mapping over the provinces and territories. The satellite will also provide global wheat crop assessments, global marine wind information, and the first radar stereo-geological map of the world.

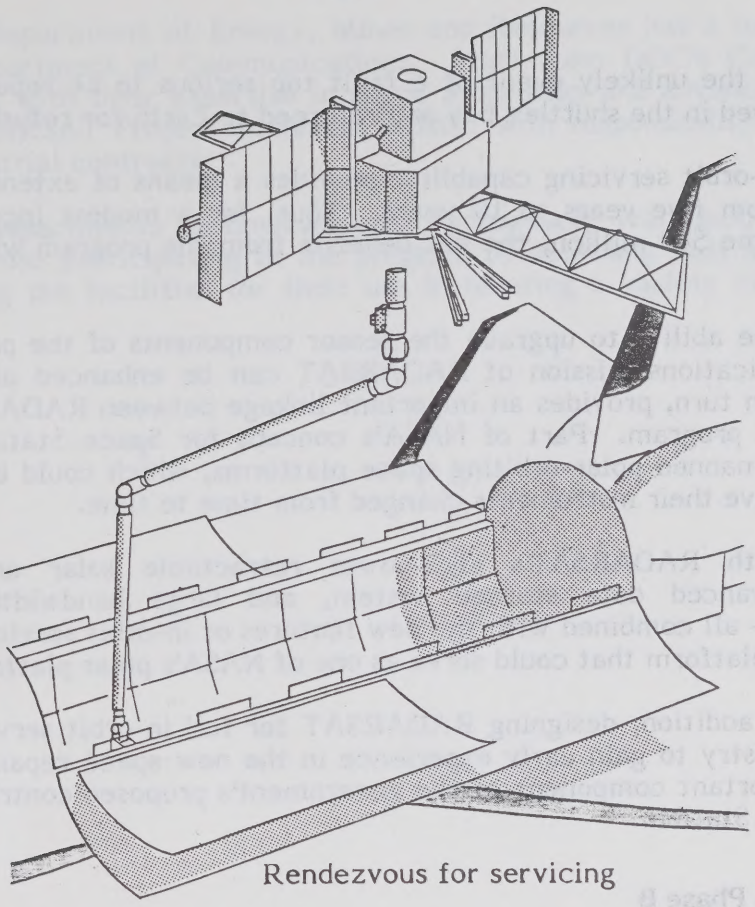
The RADARSAT program will develop an advanced civilian space radar having multiple beams, which will be superior to Japanese and European single-beam designs. Given Canada's world leadership in processing and analyzing radar data, the RADARSAT program will enable Canadian industry to exploit this competitive advantage in future international programs in space, in ground processing systems and in related interpretation services. The program will forge international partnerships to reduce the cost to Canada and will develop commercial alliances for access to spacecraft platforms and sensors.



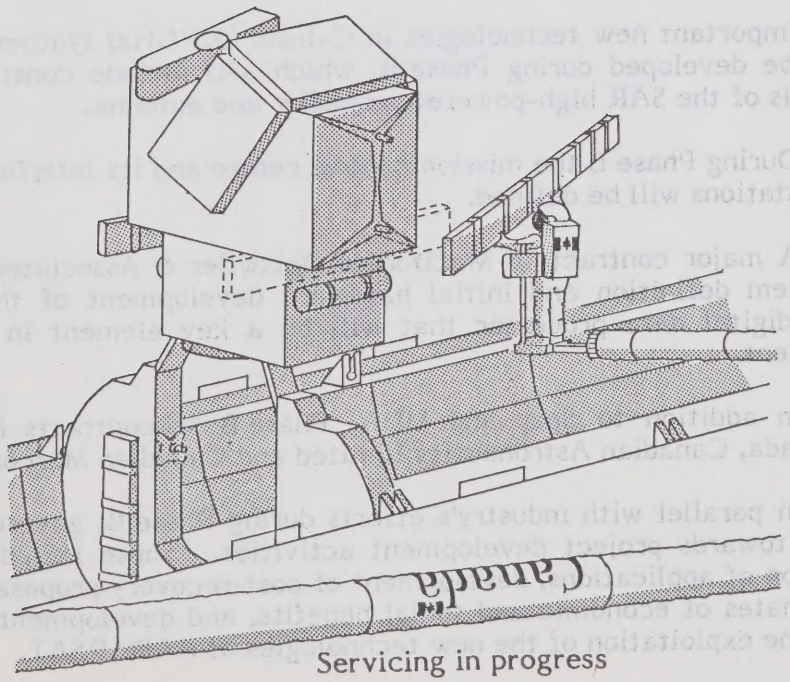
Radarsat stowed for launch



Check-out of antenna and solar arrays



Rendezvous for servicing



Servicing in progress

In the unlikely event of a fault too serious to be repaired, the satellite would be stowed in the shuttle's bay and returned to Earth for refurbishment.

In-orbit servicing capability provides a means of extending RADARSAT's useful life from five years to 10 years. Thus, for a modest increment in cost to Canada of some $40 million, the net benefits from the program will be increased by $500 million.

The ability to upgrade the sensor components of the payload also means that the applications mission of RADARSAT can be enhanced and improved with time. This, in turn, provides an important linkage between RADARSAT and NASA's Space Station program. Part of NASA's concept for Space Station is to launch a number of unmanned polar-orbiting space platforms, which could be serviced by the shuttle and have their instruments changed from time to time.

With RADARSAT's high-power retractable solar arrays, large fuel capacity, advanced data storage system, and large bandwidth data downlink transmitters – all combined with the new features of in-orbit servicing – Canada will have a space platform that could serve as one of NASA's polar platforms.

In addition, designing RADARSAT for full in-orbit serviceability enables Canadian industry to gain early experience in the new space repair technology that forms an important component of the government's proposed contribution to NASA's manned Space Station.

RADARSAT – Phase B

During the next year, the prime contractor, Spar Aerospace Limited, will define the system technical requirements and costs for the RADARSAT satellite and mission control facility.

Important new technologies in C-band (5.3 GHz) synthetic aperture radar (SAR) will be developed during Phase B, which will include construction of 'bread board' models of the SAR high-powered amplifier and antenna.

During Phase B the mission control centre and its interfaces with the data acquisition stations will be defined.

A major contract to MacDonald Dettwiler & Associates Ltd. (MDA) will provide system definition and initial hardware development of the advanced high throughput digital data processor that will be a key element in the RADARSAT ground segment.

In addition to Spar and MDA, Phase B subcontracts have been let to Telesat Canada, Canadian Astronautics Limited and Canadian Marconi Company.

In parallel with industry's efforts during Phase B, government effort will be directed towards project development activities. These include evaluation and demonstration of applications, development of cost-recovery proposals, refinement of earlier estimates of economic and social benefits, and development of plans to help industry in the exploitation of the new technologies of RADARSAT.

The Department of Energy, Mines and Resources has a major technical partner: The Department of Communications. Staff from DOC's Communications Research Centre, with their expertise in space technology and advanced radar, have formed the RADARSAT Project Technical Office, with responsibility for managing the Phase B industrial contracts.

The departments of Environment, Agriculture, Transport, and Fisheries and Oceans are also participating in the program by assessing uses of the satellite data and planning the facilities for their use in meeting a variety of departmental objectives.

- 30 -